



BILLING CODE 3510-DS-P

DEPARTMENT OF COMMERCE

International Trade Administration

University of Hawaii at Manoa, et al.

Notice of Decision on Applications

for Duty-Free Entry of Scientific Instruments

This is a decision pursuant to Section 6(c) of the Educational, Scientific, and Cultural Materials Importation Act of 1966 (Pub. L. 89-651, as amended by Pub. L. 106-36; 80 Stat. 897; 15 CFR part 301). Related records can be viewed between 8:30 A.M. and 5:00 P.M. in Room 3720, U.S. Department of Commerce, 14th and Constitution Ave, NW, Washington, D.C.

Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as each is intended to be used, that was being manufactured in the United States at the time of its order.

Docket Number: 13-008. Applicant: University of Hawaii at

Manoa, Honolulu, HI 96822. Instrument: Telescope.

Manufacturer: Advanced Mechanical and Optical Systems, Belgium. Intended Use: See notice at 78 FR 27186, May 9, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used in conjunction with the Panoramic Survey Telescope & Rapid Response System (Pan-STARRS), to discover and characterize Earth-approaching objects, both asteroids and comets that might pose a danger to the Earth, as well as a wide range of other research areas of astronomy. Critical performance characteristics include the ability to detect objects much fainter than has hitherto been possible with sufficient resolution to measure both the position and brightness level to the required precision, that the instrument be sufficiently robust and reliable that it can carry out continuous observations without direct human supervision under both benign and harsh meteorological observing conditions, and servicing and maintenance that can be performed as quickly as possible to minimize system down time. The heat released by the electrical/electronic

components cannot have an impact on the system point spread function that exceeds a combined total of 0.1 arcseconds. Other key features that were not proposed by domestic vendors include the use of 36 actuators to control the shape of the telescope's primary mirror, active cooling of the mechanical structure containing the primary mirror, design and performance analysis of the structures holding the telescope secondary mirror in position, the mechanical design and performance analysis of the telescope "truss", active cooling of the motors that move the telescope, additional performance margin of the telescope motors to provide additional power and torque in the presence of high motor loads, and the serviceability of several key telescope components that traditionally are both prone to failure and hard to get at, as well as allowing the removal of extremely difficult components.

Docket Number: 13-009. Applicant: Max Planck Florida Institute for Neuroscience, Jupiter, FL 33458. Instrument: Serial Block face microtome. Manufacturer: Gatan, United Kingdom. Intended Use: See notice at 78 FR 27186, May 9, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the

foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to analyze neural circuits employing principally bioimaging, electrophysiology and genetic approaches to understand visual perception and the organization of the visual cortex, synapse physiology and mechanisms of synaptic signaling and computation, the molecular mechanisms of synaptic function, the cellular organization of cortical circuit function, and the digital anatomy of the brain. To precisely identify synaptic contacts between neurons and distinguish between overlapping processes or actual synaptic contacts requires high resolution imaging with an Electron Microscope (EM) including 3D reconstruction of each process and its surroundings. Furthermore, relatively large volumes of brain should be imaged to cover the entire region and profile even for a single neuron. The instrument allows automatic imaging of multiple regions of interest on the sample and stage montaging for large fields of view, and a cutting thickness down to 15 nm.

Docket Number: 13-012. Applicant: New Mexico Institute of Mining and Technology. Instrument: Delay-Line (DL) Trolley. Manufacturer: University of Cambridge/Cavendish Laboratory. Intended Use: See notice at 78 FR 27186, May 9, 2013. Comments: None received. Decision: Approved.

We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to make extremely high-resolution images of a diverse range of astronomical objects. The images made using the instrument will allow a variety of astrophysical processes in the target objects to be investigated, such as protostellar accretion, disk clearing as evidence for planet formation, jets, outflows and magnetically channeled accretion, and the detection of sub-stellar companions. In order to obtain interference fringes the path lengths traveled by the light from celestial objects via the telescopes to the point where interference takes place must be equalized to a few microns. The extra path (delay) that must be inserted varies continuously as the Earth rotates, and depends on the location of the target in the sky. The instrument is used within the Magdalena Ridge Observatory Interferometer to equalize these path

lengths - one trolley for each telescope - by acting as a continuously movable retro-reflector. For most of the sky to be accessible, a delay range approximately equal to the longest inter-telescope separation must be available, requiring an unprecedented monolithic delay line length of almost 200 m. The need to accommodate 350 m baselines places a unique combination of requirements on the delay lines and hence the Delay Line Trolleys that run within them.

Docket Number: 13-014. Applicant: Max Planck Florida Institute for Neuroscience, Jupiter, FL 33458. Instrument: Two-Photon Laser Scanning Microscope. Manufacturer: Femtonics Ltd., Hungary. Intended Use: See notice at 78 FR 27186-27187, May 9, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to examine the connectivity and functional computations performed by individual neurons in the primary visual cortex of tree shrews, as well as to study the population

mechanisms responsible for rapid development of direction selectivity in the ferret primary visual cortex.

Experiments will include *in vivo* two-photon microscopy experiments that examine the response properties of neurons, two-photon imaging in the dendritic tree of single neurons to monitor dendritic inputs and integration as evoked by visual stimuli, and two-photon imaging in the visual cortex to monitor how large populations of cells develop into a coherent circuit that capably detects directional movement in a visual space. The instrument is unique in that it allows for fast, random-access two-photon imaging in three dimensions. The experiments depend on this fast 3D scanning to capture sufficient data from the dendrites of a single neuron or large numbers of cells in a neuronal population. The instrument's capabilities are achieved through the use of acousto-optical deflectors in x-, y-, and z- axes and are unmatched by galvanometric scanning systems that are bounded by inertial constraints.

Docket Number: 13-015. Applicant: IUP Research Institute, Indiana, PA 15701. Instrument: IMIC Digital Microscope. Manufacturer: TILL Photonic GmbH, Germany. Intended Use: See notice at 78 FR 27186-27187, May 9, 2013. Comments: None received. Decision: Approved. We know of no

instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to resolve whether changes in intracellular ion activity are circadian in nature, identify the underlying mechanisms for stem cell regeneration in damaged tissue, and examine the regulatory mechanisms for metabolic activity in yeast. The microscopic imaging will be used to investigate cellular properties of mice, zebrafish, planaria, yeast, and paramecium, as well as to analyze the absorption and fluorescence of ceramic optical material. Intracellular ion movement requires fluorescent confocal and FRET imaging. The fate-mapping of the stem cells requires fast fluorescent scanning provided by the instrument.

Gregory W. Campbell
Director
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Import Administration

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Date

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